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EVALUATION OF MOUNTAIN PINE BEETLE INFESTATION WOLF MOUNTAINS, CROW INDIAN RESERVATION, MONTANA, 1973

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INTRODUCTION

An outbreak of mountain pine beetle, *Dendroctonus ponderosae* Hopk., occurs at epidemic levels in ponderosa pine stands in the Wolf Mountains on the Crow Indian Reservation, approximately 10 miles east of Lodgegrass, Montana, (Fig. 1). The infestation started in 1972, probably in trees damaged by heavy snow and wind during the winters of 1971-72 and 1972-73. Many trees, some 10 to 12 inches in diameter, were broken off 10 to 30 feet above the ground. These trees provided an excellent source of breeding material for mountain pine beetle populations to build up. Large groups of 1972 faders occur directly adjacent to trees damaged by snow in all areas examined. Trees infested in 1973 occur in the immediate vicinity of trees killed in 1972.

CURRENT STATUS

The largest concentrated group of infested trees occur in the Thompson Creek drainage. Approximately 500 faders (trees attacked in 1972) were mapped during annual insect detection surveys flown during August 1973.

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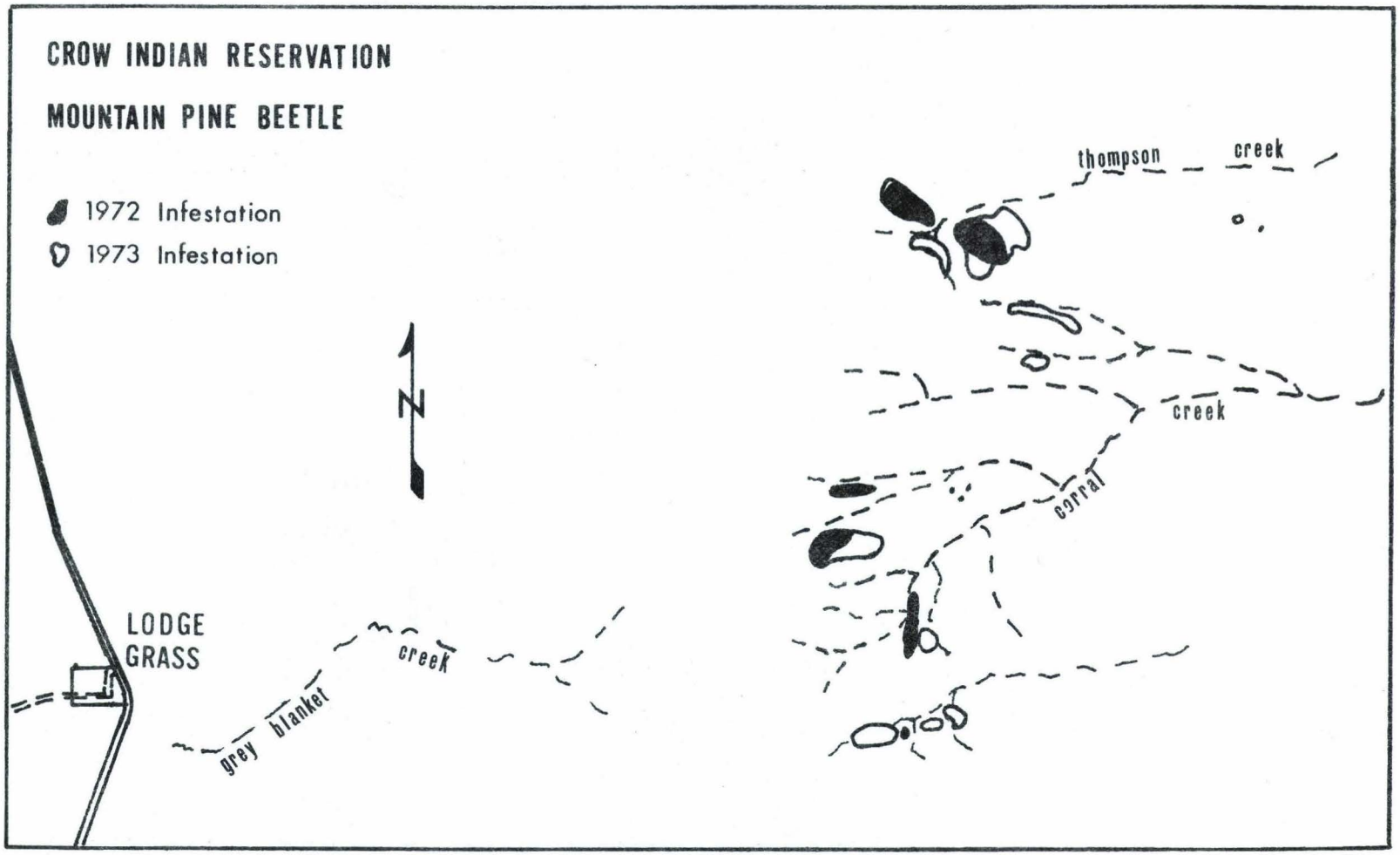
EXPERIMENT STATION


CROW INDIAN RESERVATION
MOUNTAIN PINE BEETLE
1972 Infestation
1973 Infestation
N
thompson
creek
creek
corral
LODGE
GRASS
grey
blanket
creek

Trees of all sizes down to about 6 inches d.b.h. are infested. However, frequency of attack is higher in larger diameter trees.

In Corral and Blanket Creek drainages, infested trees occur more frequently as scattered singles. Infested groups are smaller than in the Thompson Creek drainage. Trees attacked in 1973 appear plentiful and could be found adjacent to all groups of trees killed in 1972.

Pitchouts were relatively scarce in number compared to successfully attacked trees in all areas examined. The ratio of pitchouts to successful attacks, and current buildup ratio can be determined more accurately by a systematic ground survey.

Stands in the infested areas are overstocked which contributes to the susceptibility of the stand to mountain pine beetle. Trees within infested areas are mainly in the 60- to 80-year age class. However, there is an overstory of pine 16 to 20 inches d.b.h. in most of the infestation. Both age classes are being attacked by the beetle.

The majority of infested trees occur on private lands with about one-quarter of the infested trees on Crow Reservation lands administered by the Bureau of Indian Affairs.

DISCUSSION

The problem within the infested stand is basically related to overstocking. Mountain pine beetle infestations in ponderosa pine prosper in second-growth pure stands, where the host has stagnated due to overstocking. Ponderosa pine in the 60- to 80-year-old age class in overstocked stands is generally more susceptible to attack by mountain pine beetle (Sartwell, 1971). Wortendyke (1968) reports that young, unthinned ponderosa pine stands often reach maximum stand density at about age 60, at which time stagnation results from overstocking.

These stands are essentially in the same stressed condition as other second-growth ponderosa pine stands currently sustaining epidemic mountain pine beetle infestations in the Ninemile area near Missoula, Montana (Bousfield, et. al. 1973).

In second-growth ponderosa pine stands, the mountain pine beetle has assumed the role once occupied by fire as a natural thinning agent. However, when it thins, dominant and co-dominant trees are killed more frequently than are suppressed or intermediate trees. Also, infestations occur more frequently in stands containing a high basal area than in stands with a low basal area.

RECOMMENDATIONS

Successful management of the mountain pine beetle infestation will depend on whether or not positive measures are taken to improve stand conditions. Since the problem is basically related to overstocking, a commercial thinning offers a solution to the outbreak. Sartwell (1971) recommends that stands should be thinned to the following levels to prevent serious infestations of mountain pine beetle in ponderosa pine stands in eastern Oregon:

Site	Basal area/acre
III	160
IV	140
V	120
VI	100

Although these guidelines were developed for infestations of mountain pine beetle in second-growth ponderosa pine stands in eastern Oregon, we believe that infestations in second-growth stands in our area are similar enough that control can be attained if these recommendations are followed. The potential for increase may also be reduced by concentrating salvage logging in areas with the highest concentration of 1973 attacked trees. This effort should be done prior to beetle flight in June 1974.

We also recommend that slash resulting from a commercial thinning should be burned to reduce the hazard of a pine engraver, *Ips pini* Say, buildup. By adhering to the following guidelines, tree killing by *Ips* may be maintained at a tolerable level during a commercial thinning operation:

1. A continuous supply of logging slash should be maintained throughout the summer.

2. Thinning blocks should not be too large or spaced too far apart.

3. Remove decked trees as they become infested with *Ips* or mountain pine beetle during the summer.

4. Slash exposed to direct sunlight will dry out faster than unexposed slash, resulting in brood mortality.

5. Skid trees to a central landing and burn infested slash if possible.

The bark beetle problem can increase in 1974. Commercial thinning is encouraged to reduce the basal area/acre, and salvage logging to remove currently infested trees would be beneficial. This should eventually result in a release of the residual trees, making them less susceptible to mountain pine beetle attack.

REFERENCES

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